

## REMARKS/ARGUMENTS

Claims 1, 36, 38 – 60 and 64 are pending and rejected in the instant application.

Applicants respectfully request reconsideration and allowance of this application in view of the following comments.

### ***Double Patenting***

Claims 1, 36, 38 – 60 and 64 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 6, 9 and 10 of co-pending Application No. 09/492013 (now US 6,569,674).

Applicants respectfully submit that US 6,569,674 is commonly owned with the instant application. A terminal disclaimer is submitted herewith to overcome this rejection.

### ***Claim Rejections Under 35 U.S.C. § 102(b)***

Claim 1 (and claims 36, 40, 45, 47, 49, and 57 which depend therefrom) stand rejected under 35 U.S.C. § 102(b) as being anticipated by Cottingham et al. (WO 97/10056) (Cottingham).

Cottingham discloses a device comprising a substrate (i.e., the DNA card) comprising sample cells. Each sample cell comprises a chamber with a dried reagent spot, an open port, and air vent.

The DNA card disclosed is comprised of three layers of plastic film (see e.g., p. 13: Fig. 8). The top layer contains holes which form sample ports and air vents (see e.g., p.15: Figs. 5 and 8). The lower surface of the top layer forms the upper wall of the sample chamber (see e.g., Fig 4). The middle layer of the device contains keyhole-

shaped apertures that form the sample chamber side walls (e.g., p. 15: Figs. 6 and 8). The bottom layer is a solid rectangular sheet (see, e.g., Fig. 8) that forms the bottom of the DNA card. The upper surface of the bottom layer forms the lower wall of each of the sample chambers (see, e.g., Fig. 4). The three plastic film layers of the DNA card are held together by a pressure-sensitive adhesive that is typically about 0.001 inch thick (see e.g., p. 13). The sample chambers are sealed using a sealing strip with individual seals that adhere to the upper surface of the top layer (see e.g., p. 13). Each sample chamber contains, in the form of a single, discrete spot, dried DNA amplification and assay reagents adhered to the sample chamber interior (see e.g., pages 10 and 16).

The present invention teaches an apparatus for performing biological reactions comprising a substrate comprising a first and second surface, an array of biomolecular probes positioned on the first surface; a flexible layer affixed to the first surface by an adhesive layer, forming a reaction volume; and at least a first port into the reaction volume, wherein the first port extends through the flexible layer. The present invention teaches, among other features, an adhesive layer (page 17 lines 17 – 19) between the flexible layer and the first substrate surface. In contrast, Cottingham uses a pressure-sensitive adhesive to hold the three layers of plastics of their DNA card together.

An anticipation rejection requires that a single reference expressly or inherently disclose each and every element of a claim. *In re Paulsen*, 31 USPQ2d 1971, 1673 (Fed. Cir. 1994); MPEP § 2131 (citing *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)).

As discussed above, Cottingham does not teach or disclose an array of biomolecular probes positioned on the first surface of the substrate, or a flexible layer, or an adhesive layer as recited in the rejected claims. More specifically, the Cottingham reference teaches an apparatus comprising multiple layers which contains a single spot. The structure of the apparatus is also quite different as the middle plastic layer of Cottingham is held together with the other two plastic layers by an adhesive (see e.g. page 13), thus the DNA card of Cottingham consists essentially of five distinct layers. Applicants accordingly respectfully request that the 35 U.S.C. §102(b) rejection of claim 1 (and claims 36, 40, 45, 47, 49 and 57 which depend therefrom) be withdrawn.

***Claim Rejections Under 35 U.S.C. § 103(a)***

Claims 43-44 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Cottingham in view of Rehman et al. (NAR vol. 27, No. 2 pp. 649-655) (Rehman).

Cottingham is discussed above.

Rehman is directed to the attachment of oligonucleotides having 5'-terminal acrylamide modifications to supports which contain exposed acrylic groups (see e.g., abstract).

The present invention is summarized above.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation

of success must both be found in the prior art, and not based on applicant's disclosure. In *re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) M.P.E.P. §2143.

None of the references, taken alone or in combination, disclose each of the claimed elements of the invention. There is no teaching in Cottingham or Rehman of a flexible layer. Nor is there teaching of an adhesive layer in between the first substrate surface and the flexible layer. Therefore, the requirement of teaching or suggesting all of the claim elements has not been met.

Claims 48, 50-56 and 60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cottingham in view of Bjornson et al. (WO 99/19717) (Bjornson).

Cottingham is discussed above.

Bjornson teaches a continuous form microstructure array device comprising an elongate film laminate. The reference does not disclose an adhesive layer or an array of biomolecular probes positioned on the first surface of the substrate.

The present invention is summarized above.

None of the references, taken alone or in combination, disclose each of the claimed elements of the invention. There is not teaching in Cottingham or Bjornson of an adhesive layer in between the first substrate surface and the flexible layer. Nor is there teaching of an array of biomolecular probes positioned on the first substrate surface. Therefore, the requirement of teaching or suggesting all of the claim elements has not been met.

Claims 39, 41, 42, 46, 58 and 59 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cottingham in view of Besemer et al. (U.S. Patent No. 5,945,337) (Besemer).

Cottingham is discussed above.

Besemer teaches an apparatus and methods for packaging a chip. The reference does not disclose an adhesive layer or an array of biomolecular probes positioned on the first surface of the substrate.

The present invention is summarized above.

None of the references, taken alone or in combination, disclose each of the claimed elements of the invention. There is no teaching in Cottingham or Besemer of an adhesive layer in between the first substrate surface and the flexible layer. Nor is there teaching of an array of biomolecular probes positioned on the first substrate surface. Therefore, the requirement of teaching or suggesting all of the claim elements has not been met.

Claim 64 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cottingham in view of Besemer in further view of Van Antwerp et al. (U.S. Patent No. 5,786,439) (Van Antwerp).

Cottingham is discussed above.

Besemer is discussed above.

Van Antwerp teaches coating in a biosensor with a water *insoluble* hydrogel matrix. The reference does not disclose an adhesive layer or an array of biomolecular probes positioned on the first surface of the substrate.

The present invention is summarized above.

None of the references, taken alone or in combination, disclose each of the claimed elements of the invention. There is not teaching in Cottingham, Besemer, or Van Antwerp of an adhesive layer in between the first substrate surface and the flexible layer. Nor is there teaching of an array of biomolecular probes positioned on the first substrate surface. Therefore, the requirement of teaching or suggesting all of the claim elements has not been met.

Early and favorable action is earnestly solicited.

Respectfully submitted,  
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